THE ROCKEFELLER UNIVERSITY
1230 YORK AVENUE · NEW YORK, NEW YORK 10021

April 17, 1980

Dr. Joshua Lederberg
President
The Rockefeller University

Dear Josh,

I am writing to recommend the promotion of Dr. Edward M. Johnson to the rank of Associate Professor (non-tenured). Dr. Johnson is now in his fifth year as an Assistant Professor, and I believe that his accomplishments and current research programs justify consideration of his promotion at this time.

Edward Johnson received the Ph.D. from Yale University in 1971. His thesis research was carried out in the laboratory of Dr. Paul Greengard and it included the discovery of a synaptic membrane phosphoprotein which is phosphorylated by a cyclic AMP-dependent protein kinase. This modification of proteins at the synapse has become one of Dr. Greengard's primary interests. Dr. Greengard's enthusiastic recommendation convinced me that Johnson would fit in well with our program on the control of chromatin structure and transcription by the phosphorylation of DNA-binding proteins.

His initial studies, as a Postdoctoral Fellow at Rockefeller University, established that the pattern of phosphorylation of nuclear proteins in hepatocytes is modulated by cyclic AMP both in vivo and in vitro (in isolated hepatocyte nuclei), but the in vitro response to cAMP differs significantly from that observed in vivo. Many chromosomal phosphoproteins were shown not to be responsive to cyclic AMP, and the point was made that studies of protein phosphorylation in cell-free systems have a high risk of artefact.

Upon the expiration of the 2-year fellowship from the Jane Coffin Childs Foundation, Dr. Johnson joined the Immunopharmacology Laboratory at the Sloan-Kettering Cancer Center. His affiliation with the Rockefeller University continued with an appointment as an Adjunct Research Associate. During the next two years his investigations focused on changes in nuclear protein phosphorylation during the cell cycle of synchronized HeLa cells, and on the massive changes in nuclear protein composition and phosphorylation in lymphocytes stimulated to divide by the mitogen, Concanavalin A. The latter work made two very important points; 1) that mitogen activation of the lymphocyte results in a selective influx of proteins from the cytoplasm to the nucleus, and 2) that the phosphorylation of different nuclear proteins is independently modulated during the response. Subsequent studies of lymphocyte protein kinases included the observation that the catalytic subunit of the cyclic AMP-dependent enzyme is a DNA-binding protein which combines preferentially with mammalian DNA as compared with salmon sperm or E.coli DNA and does not combine with RNA. In retrospect, the significance of this observation has grown with the increasing evidence that protein kinase activity is particularly high in transcriptionally-active regions of the chromatin in cells from organisms

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To: Dr. Joshua Lederberg
From: Dr. Vincent G. Allfrey
April 17, 1980

as diverse as mammals, birds, insects and myxomycetes.

In 1975, Dr. Johnson was appointed Assistant Professor at the Rockefeller and the study of nuclear protein phosphorylation entered a new phase with the analysis of the amino acid sequence specificity requirements in the substrate and clarification of the mechanism of action of the purified catalytic subunit of cAMP-dependent protein kinase.

At about that time, we had begun work on the ribosomal genes of the myxomycete, Physarum polycephalum, an organism with unique advantages for the analysis of ribosomal gene structure and regulation. Because many of the nucleolar proteins of this organism, including subunits of RNA polymerase I, are phosphoproteins, Dr. Johnson began what has since become his major research program: the mapping of the ribosomal genes on the rDNA molecule, and the comparative analysis of chromatin structure in the transcribing and non-transcribing regions of the same rDNA molecule. It is this program which I believe justifies his promotion to the rank of Associate Professor.

His approaches combine the techniques of molecular biology (restriction nuclease mapping, hybridization analysis of coding and non-coding sequences, cloning of DNA restriction fragments, and R-loop mapping of the intervening sequences in the ribosomal genes) with methods in cell biology that permit isolation of nuclei, nucleoli, and rDNA chromatin at active and repressed stages of growth of the organism. Among the significant new results is the mapping of the site of ribosomal RNA chain initiation on the rDNA molecule, and the discovery, for the first time, of clear-cut conformational and chemical differences between the nucleosomes in the transcribing and non-transcribing DNA sequences of ribosomal chromatin. Dr. Johnson has recently made an important observation on the termini of the palindromic rDNA molecules of Physarum, sequences which are probably involved in the mechanism of insertion and excision of extrachromosomal elements in the genome.

Papers describing his work have been published in the most critically reviewed journals, and he has successfully passed peer review in the award of grants from the National Science Foundation, the NIH, the Leukemia Society of America and the National Leukemic Association.

He has actively participated in teaching at the Rockefeller University, joining in the course "Advanced Topics in Biochemistry" for the past two years. Among the graduate fellows whose research was supervised by Dr. Johnson are Arthur H. Pomerantz and Gerald Campbell. He also directs some collaborative studies with graduate students from Charles Cantor's laboratory at Columbia and from the Cornell Graduate School of Medical Sciences.

I should stress that many of the studies of ribosomal gene structure were initiated by Dr. Johnson and that he has clearly demonstrated a capacity for independent research. A list of individuals who might serve as external reviewers of Dr. Johnson's research is appended.

Sincerely yours,

Vince

Vincent G. Allfrey
Professor